

PATENT

Case Docket No. MICRON.172A

Date: August 30, 2004

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In re application of : Ammar Deraa et al.
Appl. No. : 09/945,065
Filed : August 30, 2001
For : METAL SILICIDE
ADHESION LAYER FOR
CONTACT STRUCTURES
Examiner : Junghwa M. Im
Art Unit : 2811

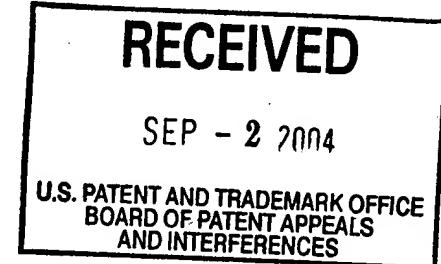
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August 30, 2004

(Date)

Linda H. Liu, Reg. No. 51,240

**BOARD OF PATENT APPEALS AND INTERFERENCES
UNITED STATES PATENT AND TRADEMARK OFFICE
P.O. Box 1450
Alexandria, VA 22313-1450**



Sir:

Transmitted herewith is a Response to the Examiner's Answer in triplicate to the Board of Patent Appeals are:

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Ammar Deraa et al.
 Appl. No. : 09/945,065
 Filed : August 30, 2001
 For : METAL SILICIDE ADHESION
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CERTIFICATE OF MAILING

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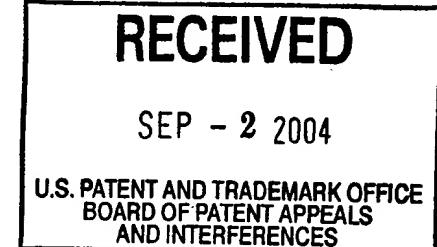
Linda H. Liu, Reg. No. 51,240

ON APPEAL TO THE BOARD OF PATENT APPEALS AND INTERFERENCES
APPELLANT'S REPLY BRIEF

Commissioner for Patents
 P.O. Box 1450
 Alexandria, VA 22313-1450

Dear Sir:

Applicant, in the above-captioned patent application, reply to the Examiner's Answer mailed June 30, 2004. This Reply Brief is filed in triplicate.

**REPLY**

In the Examiner's Answer, the Examiner states that Appellant mainly argues "none of the references teach an integrated circuit contact structure having a metal silicide adhesion layer that functions both as an adhesion layer and a refractory metal silicide layer." The Examiner took the position that since Taguwa shows a titanium silicide layer formed between a titanium layer and a titanium nitride layer, Taguwa teaches a titanium silicide layer is a refractory metal silicide layer that also serves the function of enhancing adhesion between the titanium and titanium silicide.

Appellant respectfully disagrees with the Examiner's characterization of Appellant's main argument. Appellant would like to clarify its argument by emphasizing that none of the prior art references disclose an integrated circuit having a metal silicide adhesion layer that

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functions both as an adhesion layer and a refractory metal silicide layer *which serves to improve the contact at the interface between the metal and semiconductive active areas.*

While Taguwa discloses a titanium silicide layer, Appellant notes that Taguwa's titanium silicide layer is interposed between the titanium and titanium nitride layers and therefore does not contact the semiconductor substrate. As such, Taguwa's titanium silicide layer could not possibly serve the function of a refractory metal silicide layer that improves the contact at the interface between the metal and semiconductive areas.

Appellant further submits that there is no motivation to combine the teachings in Taguwa with Thakur to form a structure having a metal silicide adhesion layer that also functions as a refractory metal silicide layer used to improve the contact between the metal and semiconductive active areas. Taguwa is directed to a contact structure having layers of titanium silicide interposed between titanium and titanium nitride to absorb thermal stress therebetween. Thakur discloses forming a refractory metal silicide layer in the contact area using conventional dopant implant processes. Appellant submits that it would be counter-intuitive to form an additional layer of metal silicide directly on the refractory metal silicide already formed in the contact region in Thakur.

In accordance with the above remarks and the remarks made in the Appeal Brief filed October 20, 2003, the Appellant respectfully submits that the invention defined by Claims 1-4 and 6-20 is not made obvious by Taguwa, Thakur, or a combination of the two, and that these claims are in condition for allowance.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 8/30/2004

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